

Figure D-6. Meteorological stations and region boundaries for the continental United States with Bailey's ecoregions (Bailey et al., 1994).

(continued)

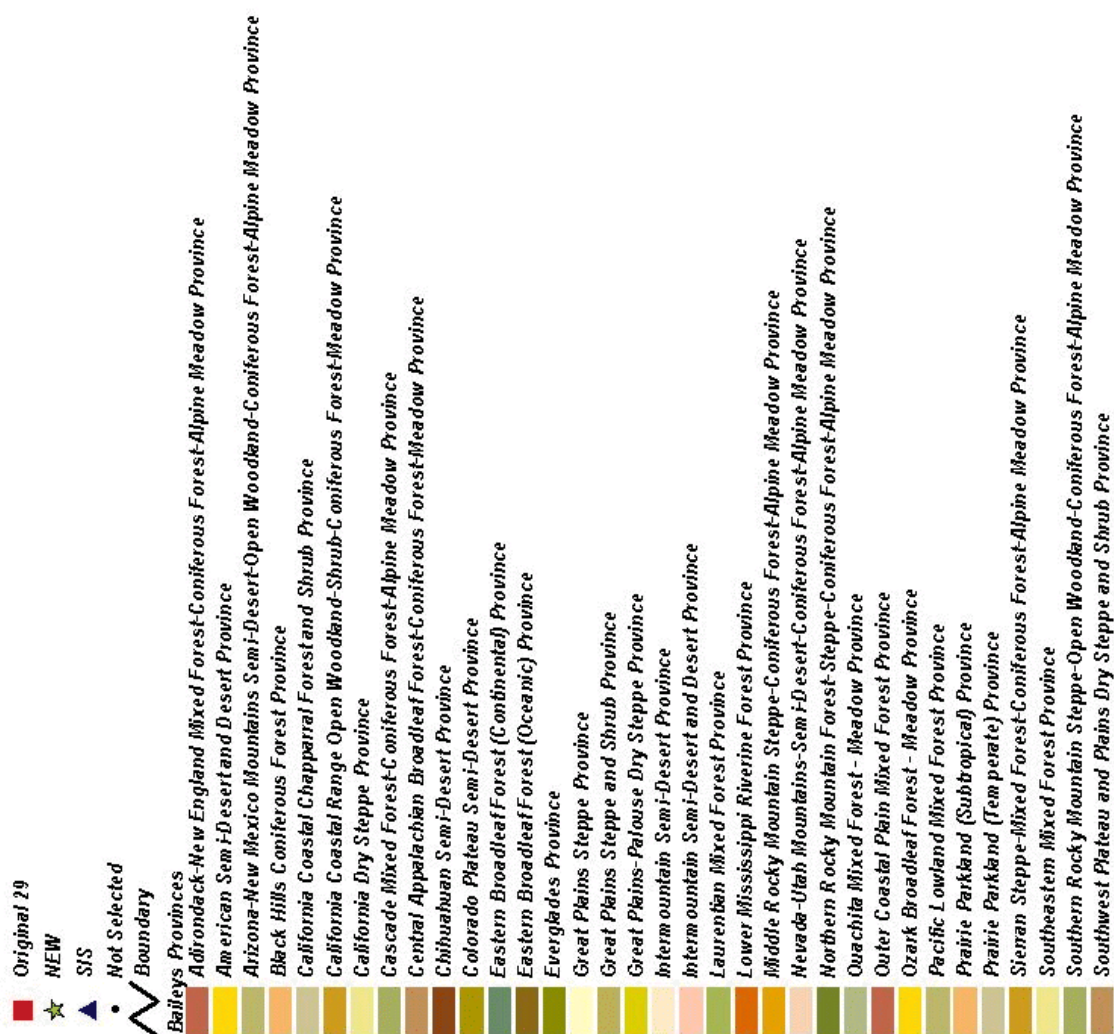


Figure D-6. (continued)

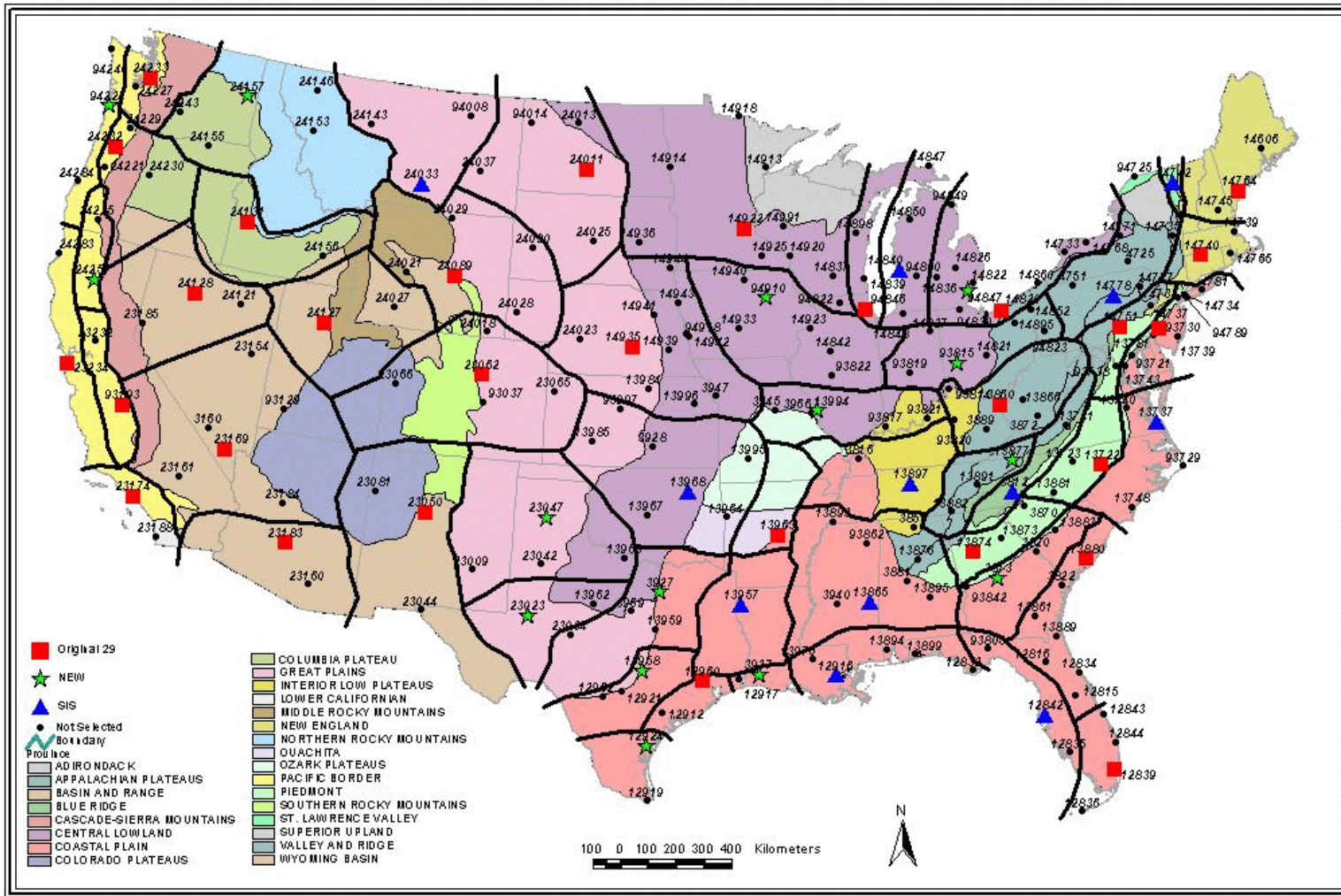


Figure D-7. Meteorological stations and region boundaries for the continental United States with physiography (Fenneman and Johnson, 1946).

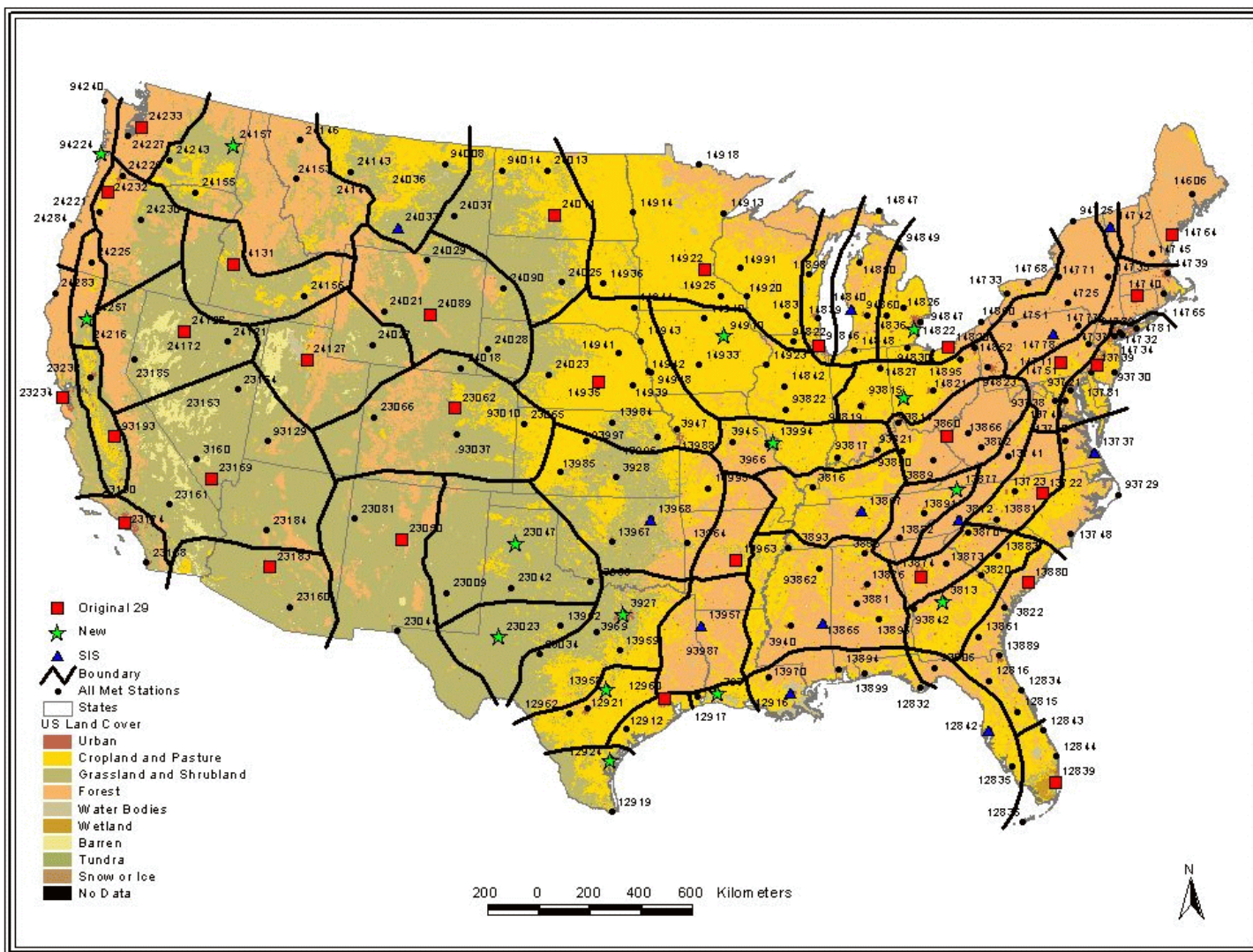


Figure D-8. Meteorological stations and region boundaries for the continental United States with land cover (USGS, 1999).

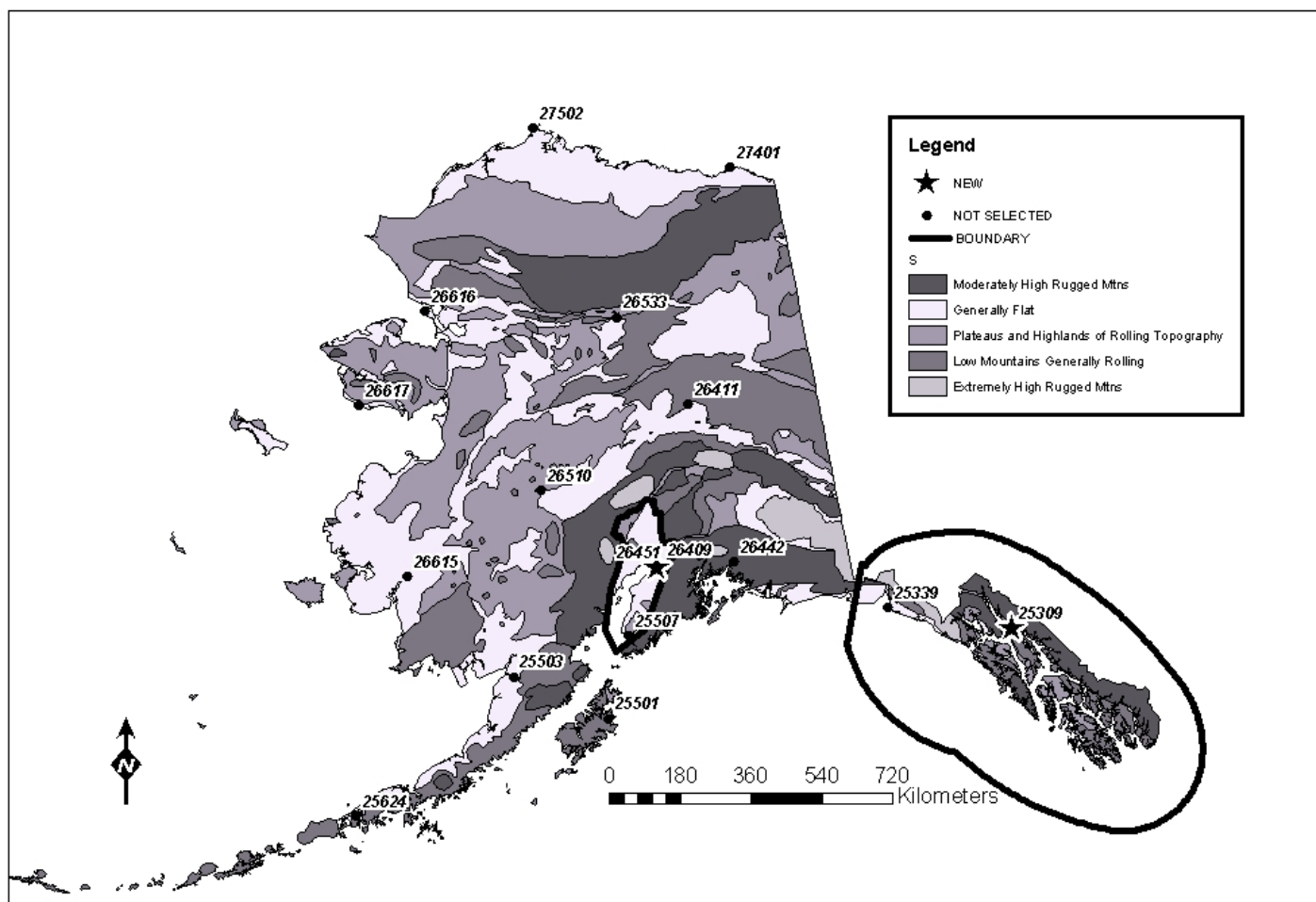


Figure D-9. Meteorological stations and region boundaries for Alaska with physiography (Wahrhaftig, 1965).

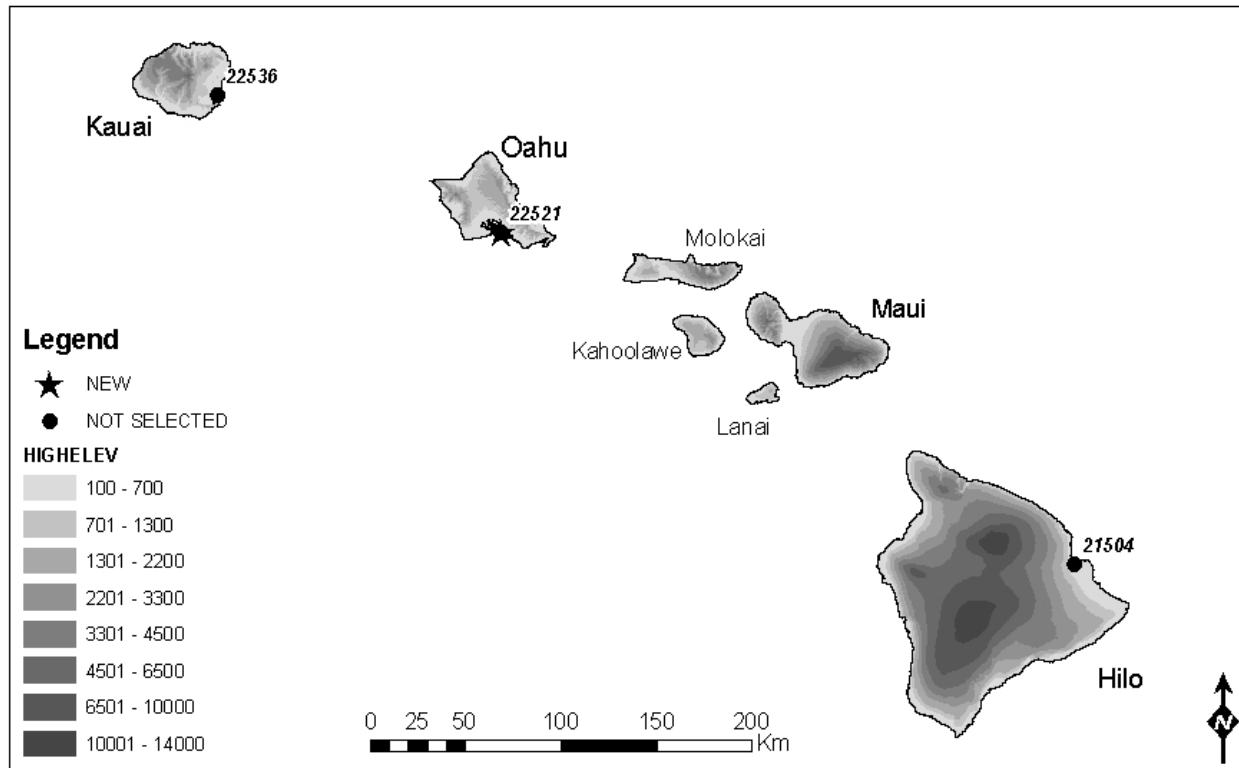


Figure D-10. Meteorological stations for Hawaii with physiography (State of Hawaii, 1997).

D.3.2 Desert Southwest

The Desert Southwest is defined by various deserts and mountain ranges. One distinguishing feature is the transition between low desert in southern Arizona and high desert in northern Arizona. The southern boundary of this section is the United States/Mexico border.

Southern Arizona contains the Sonoran Desert. This region of low desert is represented by the station at **Phoenix**/Sky Harbor International Airport (23183). The region is bounded to the north between Phoenix and Prescott, Arizona, along the southern edge of the Columbia Plateau, which represents the transition from low to high desert. The wind rose shows moderate directionality (bin B), and the average wind speed is 6 knots.

Northern Arizona, southeastern California, southern Nevada, and southern Utah are represented by the station at **Las Vegas**/McCarran International Airport (23169). This region is characterized by high desert, including the Columbia Plateau. Relatively few facilities and people are located here. The wind rose shows mild directionality (bin A), and the average wind speed is 10 knots.

The mountainous region of western New Mexico and far west Texas is represented by the station at **Albuquerque** International Airport (23050). This region is bounded on the east by the Sacramento Mountains east of El Paso, Texas, and by the Sangre de Cristo Mountains east of Albuquerque, New Mexico. The wind rose shows weak directionality (bin W), and the average wind speed is 8 knots.

D.3.3 Western Mountains

The Western Mountains include numerous mountain ranges, plateaus, and valleys that affect wind flows. The northern portion of the Western Mountains is bounded on the west by the eastern edge of the Humid Temperate Domain and on the east by the Great Plains in western Montana. The southern boundary is approximately at the southern edge of the Temperate Steppe Regime Mountains. This region is represented by the station at **Spokane** International Airport. The wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

The inland region of Oregon includes both the central valley area and the Great Sandy Desert, east to the Columbia Plateau. The western boundary is the Coast Ranges. The Black Rock Desert forms the southern boundary. This region is represented by the station at McNary Field in **Salem, Oregon** (24232). The wind rose shows moderate directionality (bin B), and the average wind speed is 9 knots. Facilities in the eastern portion of this region should consider obtaining local meteorological data and running the ISCST3 model to obtain local dispersion factors for IWAIR; this area is not well-represented by any of the surrounding stations but did not have enough population or TRI facilities to warrant adding another station to IWAIR.

The Snake River Plain of southern Idaho forms the region represented by **Boise** Air Terminal (24131) in Idaho. This region is bounded by the Salmon River Mountains on the north and the Columbia Plateau to the west and south. The wind rose shows moderate directionality (bin B), and average wind speed is 9 knots.

Northern Nevada and northeastern California are represented by the station at **Winnemucca** WSO Airport (24128) in Nevada. This is the Great Basin area. The wind rose shows mild directionality (bin A), and the average wind speed is 8 knots.

The Salt Lake Basin and the Great Divide Desert in Utah and Colorado are represented by the station at **Salt Lake City** International Airport (24127) in Utah. The eastern boundary of this region is formed by the Wind River Range and the Front Range. The wind rose shows moderate directionality (bin B), and the average wind speed is 9 knots.

D.3.4 Texas (Excluding the Gulf Coast)

The state of Texas is a very large section encompassing many wind regimes. These are bounded by mountains, deserts, forests, the Gulf of Mexico, and plains. The Gulf Coast region is covered in Section D.3.5.

The Texas Panhandle region is represented by the station at **Amarillo** International Airport (23047). The western boundary is formed by the Sangre de Cristo Mountains in New Mexico. The northern boundary is the southern edge of the Great Plains. The southern boundary divides this region from the West Texas region to its south. The wind rose shows mild directionality (bin A), and the average wind speed is 13 knots.

The West Texas region includes high plateaus and is represented by the station at **Midland** Regional Airport (23023). The western boundary of this region is formed by the Sacramento Mountains. The wind rose for this region shows moderate directionality (bin B), and the average wind speed is 10 knots.

Central Texas is represented by the station at **Dallas/Ft. Worth** airport (03927). The majority of the population in this region is located in the vicinity of Dallas and Ft. Worth. Also, most of the industrial facilities in this region are located in that vicinity. The southwestern portion of this region encompasses the Edwards Plateau. The eastern boundary is formed by the transition to forest in eastern Texas. The wind rose shows strong directionality (bin C), and the average wind speed is 11 knots.

South Central Texas includes the area north of the southern coastal region and south Texas. The eastern boundary is formed by the eastern edge of the Prairie Parkland (Subtropical) Province. The southern boundary is formed by the transition from grassland and crop land to the shrub land in Southern Texas. This region is represented by the station at **Austin** Municipal Airport (13958). The wind rose shows moderate directionality (bin B), and the average wind speed is 8 knots.

Southern Texas includes the southern coast of the Gulf of Mexico, including Corpus Christi and Brownsville, Texas. This region is represented by the station at **Corpus Christi** International Airport (12924). The southern and western borders are formed by the Rio Grande River. The eastern border is the Gulf of Mexico. The northern boundary is formed by the transition from shrub land in Southern Texas to grassland and crop land in South Central Texas. The wind rose shows strong directionality (bin C), and the average wind speed is 12 knots.

D.3.5 Gulf Coast

The wind regime along the Gulf of Mexico is strongly influenced by that body of water. However, its effects do not reach very far inland. A series of regions have been designated to represent the coastal section.

The middle Texas Gulf Coast is represented by the station at **Houston** Intercontinental Airport (12960). Although Houston itself is somewhat inland, it is expected to have a more coastal environment due to Galveston Bay. This region extends south past Victoria to the vegetative boundary marking Southern Texas. The wind rose in this region shows mild directionality (bin A), and the average wind speed is 8 knots.

The western portion of the Louisiana Gulf Coast and the far eastern portion of the Texas Gulf Coast has the vegetative land cover change to forest as its northern border. This relatively small area includes a high concentration of industrial facilities along the coast. The station at **Lake Charles** Municipal Airport (03937) represents this region. The wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

The Central Gulf Coast extends from eastern Louisiana through the Florida panhandle. This entire region is part of the Outer Coastal Plain Mixed Forest Province and is characterized by weakly directional winds. The station at **New Orleans** International Airport (12916) in Louisiana represents this region. The wind rose shows weak directionality (bin W), and the average wind speed is 8 knots.

The West Coast of the Florida Peninsula is heavily influenced by the Gulf of Mexico, which has warmer water than the Atlantic Ocean off the East Coast of the Florida Peninsula. This region extends from the Florida Panhandle to the north to Cape Romano, just north of the Everglades in South Florida. The station at **Tampa** International Airport (12842) represents this region. The wind rose shows mild directionality (bin A), and the average wind speed is 7 knots.

D.3.6 Southeast

The Southeast section extends from the Atlantic coastal region of Florida and the Florida Keys northward through Georgia and South Carolina. This region has an extremely broad coastal plain, requiring it to be divided between coastal region and more inland regions for Georgia and South Carolina. This section also includes the inland areas of Louisiana, Mississippi, and Alabama.

The southern tip of Florida includes the Everglades, which have been drained along the Atlantic coast to provide land for Miami, Ft. Lauderdale, West Palm Beach, and other coastal cities. This region, which includes the Florida Keys, is represented by the station at **Miami** International Airport (12839). Its wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

A long stretch of the Southeastern Atlantic Coast extends from north of Vero Beach, Florida (i.e., just south of Cape Canaveral), through Georgia and South Carolina. The Atlantic

Ocean forms the eastern boundary, and the land cover boundary between the more forested coast and more agricultural inland area forms the western boundary. The station at **Charleston** International Airport (13880) represents this region. The wind rose shows weak directionality (bin W), and the average wind speed is 8 knots.

The inland coastal plain of Georgia and South Carolina extends inland from the coastal forest/agriculture land cover boundary to the physiographic boundary between the Coastal Plain and the Blue Ridge. This region is represented by the station at **Macon**'s Lewis B. Wilson Airport (03813) in Georgia. The wind rose shows weak directionality (bin W), and the average wind speed is 8 knots.

Further inland in Georgia and South Carolina lies the Blue Ridge region. This region is delineated by physiographic boundaries—the transition to the Coastal Plain on the coastal side and to the Appalachian Plateaus on the inland side. The station at **Atlanta** Hartsfield International Airport (13874) represents this region. The wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

The inland areas of Alabama and Mississippi are represented by the station at **Meridian** Key Field (13865), which is located in Mississippi close to the Alabama border. This region extends from the Central Gulf Coast region northward into southern Tennessee (including Memphis) and westward into the Coastal Plain region of eastern Arkansas. The wind rose shows mild directional (bin A), and the average wind speed is 7 knots.

The inland portion of Louisiana and eastern Texas is part of the Coastal Plain. This region extends northward to the Ouachita Mountains, which are just south of the Ozark Plateau in Arkansas. The western boundary is the vegetative transition from the forests in this region to the prairies in Texas. This region is represented by the station at **Shreveport** Regional Airport (13957) in Louisiana. The wind rose is mildly directional (bin A), and the average wind speed is 9 knots.

D.3.7 Middle Atlantic

The Middle Atlantic section includes coastal areas with bays, sounds, inlets, and barrier islands; a broad coastal plain; and the southern Appalachian Mountains. The physiographic features generally extend from northeast to southwest, parallel to the coast of the Atlantic Ocean.

The coastal region of North Carolina and Virginia is represented by the station at **Norfolk** International Airport (13737) in Virginia. This region is bounded by the Atlantic Ocean on the east, the physiographic boundary to the Piedmont section to the west, the political border between North Carolina and South Carolina to the south, and a line bisecting the Chesapeake Bay to the north. The wind rose shows mild directionality (bin A), and the average wind speed is 10 knots.

The Piedmont region of North Carolina and Virginia is just inland from the coastal region. This region is delineated on the east by the physiographic boundary with the coastal plain, and on the west with the physiographic boundary with the Appalachian Mountains. This region is

also part of the Southeastern Mixed Forest Province of Bailey's ecoregions. The station at **Raleigh-Durham** Airport (13722) in North Carolina represents this region. The wind rose shows weak directionality (bin W), and the average wind speed is 8 knots.

The eastern portion of the southern Appalachian Mountains lies to the west of the Piedmont region of North Carolina and Virginia. This region extends to the southwest to include a portion of western South Carolina and northeastern Georgia. The station at **Asheville** Regional Airport (03812) in North Carolina represents this region. The wind rose shows moderate directionality (bin B), and the average wind speed is 10 knots.

The western portion of the southern Appalachian Mountains, including the Cumberland Plateau, lies in western Virginia, eastern Tennessee, northwestern Georgia, and northeastern Alabama. The western edge of this region follows the physiographic boundary between the Appalachian Plateaus and the Interior Low Plateaus. The station at **Bristol** Tri City Airport (13877) in Tennessee represents this region. The wind shows weak directionality (bin W), and the average wind speed is 8 knots.

The Appalachian Mountains of West Virginia and eastern Kentucky are characterized by mountainous ridges and valleys extending from northeast to southwest. This region is represented by the station at **Huntington** Tri-State Airport (03860) in West Virginia. The wind rose shows mild directionality (bin A), and the average wind speed is 7 knots.

The inland region encompassing northern Virginia, part of Maryland, and eastern Pennsylvania is composed of another section of the Appalachian Mountains. Boundaries are approximated by the Bailey's Central Appalachian Forest province. The station at **Harrisburg**/Capital City Airport (14751) in Pennsylvania represents this region. The wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

The northern portion of the Chesapeake Bay northward through New Jersey, eastern Pennsylvania, and New York City is characterized by the Eastern Broadleaf Forest (Oceanic) Province in the coastal plain. The station at **Philadelphia** International Airport (13739) in Pennsylvania represents this region. The wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

D.3.8 Northeast

The Northeast section includes New England. This region is characterized by forests to the north, large urban areas along the southern coastal plain, and the mountain ridges and valleys of the northern Appalachian Mountains. This section is bounded by the Atlantic Ocean on the east, the U.S./Canada border on the north, and the coastal plain of the eastern Great Lakes to the west.

The station at Bradley International Airport (14740) in **Hartford**, Connecticut, represents the New England region, which encompasses Connecticut, Massachusetts, Rhode Island and a small portion of Vermont, New Hampshire, and eastern New York. The wind rose shows mild directionality (bin A), and the average wind speed is 8 knots.

Northern New England is represented by the station located at the International Jetport (14764) in **Portland**, Maine. This region includes Maine and most of New Hampshire and Vermont. The northwest portion of Vermont is not included in this region. The wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

The station at the International Airport (14742) in **Burlington**, Vermont, represents a very small region. Burlington is located in a valley between mountainous areas of the northern Appalachian Mountains. The wind rose shows moderate directionality (bin B), and the average wind speed is 10 knots.

The remainder of the northern Appalachian Mountains in New York and Pennsylvania is represented by the station at **Williamsport-Lycoming** (14778) in Pennsylvania. This region is bounded on the west by the Adirondack Mountains, just to the east of the coastal plain of Lake Ontario. The wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

D.3.9 Great Lakes

The Great Lakes are bodies of water large enough to affect weather patterns in that portion of the country. Land and sea breezes affect wind patterns along the coasts, especially along Lake Michigan in the summer. The moisture of the lakes also affects winter precipitation patterns (i.e., lake effect snow storms).

The Eastern Great Lakes divide the United States and Canada. On the U.S. side, the western portion of New York, a small portion of Pennsylvania, and northeastern Ohio border the eastern shores of Lake Ontario and Lake Erie. Mountains form the eastern boundary. The southwestern border is drawn southward from the southern shore of Lake Erie. The station at Hopkins International Airport (14820) in **Cleveland**, Ohio, represents this region. The wind rose shows moderate directionality (bin B), and the average wind speed is 10 knots.

The Lower Peninsula of Michigan is bordered by the Great Lakes on three sides. Although this region has relatively few topographic features, the presence of the lakes may result in different dispersion analyses for the eastern and western portions of the state. Therefore, the Lower Peninsula has been divided into two regions—East and West.

The eastern region of the Lower Peninsula of Michigan is bordered by Lake Erie, Lake St. Clair, and Lake Huron and includes Saginaw Bay and a small abutment with Canada. This region is represented by the station at **Detroit** Metropolitan Airport (94847). The wind rose shows mild directionality (bin A), and the average wind speed is 10 knots.

The western region of the Lower Peninsula of Michigan is bordered by Lake Michigan on the west and the Straits of Mackinac on the north. The eastern portion of the Upper Peninsula of Michigan is also included in this region. The station at **Muskegon** County Airport (14840) represents this region. The wind rose shows weak directionality (bin W), and the average wind speed is 11 knots.

The western shore of Lake Michigan, which includes Green Bay, is formed by the northeastern portion of Illinois, eastern Wisconsin, and part of the Upper Peninsula of Michigan. Lake Superior forms the northern boundary of this region, and the western boundary is formed by the hills to the east of the Wisconsin River and the Upper Mississippi River. This region is represented by the station at O'Hare International Airport (94846) in **Chicago**, Illinois. The wind rose shows mild directionality (bin A), and the average wind speed is 9 knots.

D.3.10 Central States

This section includes the Central Lowlands (south of the Great Lakes), the Midwest, and the Great Plains. The elevation for this section is generally lowest in the Mississippi Valley, which extends through the Midwest and drains a large portion of the center of the continental United States. This section also includes other major river valleys, including the Ohio, Tennessee, and Missouri. This section is bordered on the east by the Appalachian Mountains, on the west by the Rocky Mountains, on the north by the border with Canada, and on the south by the Southeast, Texas, and the Desert Southwest.

The Central Lowland is the area south of the Great Lakes and west of the Appalachian Mountains. This area is divided into several regions based on wind rose data. The region that includes central Indiana, Ohio, and western Pennsylvania is represented by the new station at **Dayton** International Airport (93815) in Ohio. The western boundary is formed by a transition from hills in this region to flat land to its west. The northern boundary is formed by the Great Lakes section, and the eastern and southeastern boundaries are formed by the Appalachian Mountains. The wind rose shows mild directionality (bin A), and the average wind speed is 10 knots.

The region encompassing parts of Illinois, northeastern Missouri, and most of Iowa is relatively flat farmland. The station at **Waterloo** Municipal Airport (94910) in Iowa represents this region. The wind rose shows mild directionality (bin A), and the average wind speed is 11 knots.

The region of southern Indiana, south-central Illinois, and east-central Missouri includes the industrial area surrounding St. Louis, Missouri. The station at Lambert International Airport (13994) in **St. Louis**, Missouri, represents this region. The wind rose shows mild directionality (bin A), and the average wind speed is 10 knots.

The region to the south of the one represented by St. Louis includes western Kentucky, central and western Tennessee north of Memphis, and southeastern Missouri east of the Ozark Plateau. This region is represented by the station at **Nashville** Metropolitan Airport (13897) in Tennessee. The wind rose shows moderately directionality (bin B), and the average wind speed is 8 knots.

Adams Field (13963) in **Little Rock**, Arkansas, represents a small region that includes the higher portions of the Ozark Plateau in southern Missouri and northern Arkansas and the Ouachita Mountains in central Arkansas. The wind rose shows weak directionality (bin W), and the average wind speed is 7 knots.

The northern portion of the Midwest includes the portion of Wisconsin west of the Lake Michigan coastal plain, Minnesota, and the eastern portion of North and South Dakota. The western boundary through the Dakotas is the physiographic boundary between the Central Lowland and the Great Plains. This region is represented by the station at **Minneapolis-St. Paul** International Airport (14922) in Minnesota. The wind rose shows mild directionality (bin A), and the average wind speed is 11 knots.

The Great Plains lie between the Central Lowlands to the east and the Rocky Mountains to the west. The headwaters of the Mississippi and the Missouri rivers are located in the Great Plains. Lands at higher elevations are more grassland and shrub land used for cattle ranges, while the lower elevations are used more frequently for crops. The region that includes the western portion of North and South Dakota and eastern Montana is represented by the station at **Bismarck** Municipal Airport (24011) in North Dakota. The wind rose shows weak directionality (bin W), and the average wind speed is 12 knots.

The central portion of Montana is more rugged, but still part of the Great Plains. The Rocky Mountains form the western and southwestern boundaries of this region, which is represented by the station at **Billings** Logan International Airport (24033) in Montana. The wind rose shows strong directionality (bin C), and the average wind speed is 10 knots.

The original station at **Casper**/Natrona County International Airport (24089) in Wyoming represents Wyoming east of the Front Range of the Rocky Mountains, southwestern South Dakota, and western Nebraska. The wind rose shows strong directionality (bin C), and the average wind speed is 14 knots. In this region, most cities are located in valleys or near the base of a mountain ridge. The wind regime at Casper, therefore, may not adequately represent facilities at other locations in this region.

The region represented by the station at Stapleton International Airport (23062) in **Denver**, Colorado, has facilities clustered in the Denver vicinity. The southern boundary is formed by the southern edge of the Great Plains. The wind rose shows mild directionality (bin A), and the average wind speed is 8 knots. Grand Junction, Colorado, which is located in the western portion of the state, is included in this region although it exhibits a different wind regime. Facilities located in the western portion of Colorado should consider entering dispersion factors based on their local meteorological data; this area is not well-represented by any of the surrounding stations, and did not have enough population or TRI facilities to warrant adding another station to IWAIR.

The north-central portion of the Great Plains includes most of Nebraska, northern Kansas, western Iowa, southwestern South Dakota, and northwestern Missouri. This region is represented by the station at **Grand Island** Airport (14935) in Nebraska. The wind rose shows moderate directionality (bin B), and the average wind speed is 12 knots.

The southern portion of the Great Plains includes eastern Oklahoma, most of Kansas, and the lower area of the western Ozark Plateau in southwestern Missouri and northwestern Arkansas. This region is represented by the station at **Tulsa** International Airport (13968). The wind rose shows moderate directionality (bin B), and the average wind speed is 11 knots.

D.3.11 Alaska

Alaska contains a wide variety of topography and land cover (see Figure D-9). The northern portion of the state, which includes the North Shore oil fields, is primarily tundra on flat topography. The southwestern portion is grassland and shrub land on flat to rolling topography. The remainder of the state includes large, forested valleys and rugged mountains with glaciers. The coastal areas include numerous islands. IWAIR includes two stations in Alaska, but cannot represent the entire state. The 1998 TRI data were used to select the locations of the included stations.

The station at **Juneau** International Airport (25309) represents the southeastern portion of Alaska. This region extends from just west of Yakutat Bay southward to Dixon Entrance. Canada forms the northeastern border, and the Gulf of Alaska is on the west. The wind rose shows strong directionality (bin C).

The station at **Anchorage** WSMO Airport is in a unique wind regime in a coastal valley surrounded by mountains. However, several TRI facilities report land-based air emissions for this region. Anchorage is located at the northern end of Cook Inlet. Industrial facilities are located just to its south on the western portion of the Kenai Peninsula. This region, therefore, is bounded by the Alaska Range to the west and north, the Chugach Mountains to the east, and the Gulf of Alaska to the south. The wind rose shows mild directionality (bin A), and the average wind speed is 8 knots.

All Alaska zip codes and coordinates that are not located within the regions assigned to the stations at Juneau and Anchorage are assigned to a “no data” region. Users entering coordinates in the “no data” region will be required to enter user-defined dispersion factors, based on local meteorological data.

D.3.12 Hawaii

The station at **Honolulu** International Airport (22521) on Oahu represents Hawaii. The wind rose shows strong directionality (bin C).

D.3.13 Puerto Rico

The station at **San Juan** represents Puerto Rico; this is the only station in Puerto Rico. The wind rose shows strong directionality (bin C), and the average wind speed is 11 knots.

D.4 References

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Appendix D-1

Data for Meteorological Stations Considered for Inclusion in IWAIR

Table D1-1. Data for All Meteorological Stations Considered; Grouped by Region and Final Assignment

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
West Coast								
23174	LOS ANGELES/INT'L ARPT	CA	original	8	C	30/52	20/43/37	
23188	SAN DIEGO/LINDBERGH FIELD	CA		8	B	17/41	NA	
23234	SAN FRANCISCO/INT'L ARPT	CA	original	12	C	24/52	17/54/29	
24283	ARCATA/ARPT	CA		NA	A	11/24	NA	3 yrs data
24233	SEATTLE/SEATTLE-TACOMA INT'L	WA	original	10	B	18/45	15/60/25	
24227	OLYMPIA/ARPT	WA		8	B	17/41	NA	
24257	REDDING/AAF	CA	new	NA	B	17/39	NA	4 yrs data
24225	MEDFORD/JACKSON COUNTY ARPT	OR		6	A	11/28	24/38/38	
93193	FRESNO/AIR TERMINAL	CA	original	7	C	24/45	29/29/42	
23232	SACRAMENTO/EXECUTIVE ARPT	CA		9	A	12/34	24/35/40	4 yrs data
94224	ASTORIA/CLATSOP COUNTY ARPT	OR	new	8	W	9/26	NA	
94240	QUILLAYUTE/WSO AIRPORT	WA		7	W	8/22	NA	
24284	NORTH BEND/FAA AIRPORT	OR		NA	B	15/30	NA	3 yrs data
Desert Southwest								
23050	ALBUQUERQUE/INT'L ARPT	NM	original	8	W	9/23	26/36/37	
23081	GALLUP/FAA AIRPORT	NM		NA	A	11/26	NA	
23044	EL PASO/INT'L ARPT	TX		8	W	8/18	28/30/42	local mountain effects
23169	LAS VEGAS/MCCARRAN INT'L ARPT	NV	original	10	A	13/33	27/38/35	
23184	PRESCOTT/MUNICIPAL	AZ		NA	C	25/52	NA	
23161	DAGGETT/FAA AIRPORT	CA		NA	C	24/60	NA	3 yrs data
03160	DESERT ROCK	NV		NA	A	13/29	NA	4 yrs data
23154	ELY/YELLAND FIELD	NV		10	C	22/49	NA	
93129	CEDAR CITY/FAA AIRPORT	UT		NA	A	13/31	NA	
23183	PHOENIX/SKY HARBOR INT'L ARPT	AZ	original	6	B	16/35	33/18/49	
23160	TUCSON/INT'L ARPT	AZ		7	B	18/41	28/31/41	
Western Mountains								
24127	SALT LAKE CITY/INT'L ARPT	UT	original	9	B	18/46	22/44/34	
24027	ROCK SPRINGS/FAA AIRPORT	WY		NA	B	20/42	NA	4 yrs data

(continued)

Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
24128	WINNEMUCCA/WSO AIRPORT	NV	original	8	A	10/23	23/39/38	2 yrs data only
24121	ELKO/MUNICIPAL ARPT	NV		8	W	9/24	NA	4 yrs data
23185	RENO/CANNON INT'L ARPT	NV		10	W	9/22	NA	
24131	BOISE/AIR TERMINAL	ID	original	9	B	16/37	21/45/34	
24156	POCATELLO/MUNICIPAL ARPT	ID		10	B	16/44	18/51/31	
24157	SPOKANE/INT'L ARPT	WA	new	9	A	13/35	17/55/28	
24243	YAKIMA/AIR TERMINAL	WA		7	B	18/40	26/39/35	4 yrs data
24146	KALISPELL/GLACIER PK INT'L AP	MT		8	A	11/25	NA	
24153	MISSOULA/JOHNSON-BELL FLD	MT		7	W	9/24	NA	4 yrs data
24155	PENDLETON/MUNICIPAL ARPT	OR		NA	A	11/28	22/47/31	
24232	SALEM/MCNARY FIELD	OR	original	9	B	16/31	16/53/31	
24221	EUGENE/MAHLON SWEET ARPT	OR		9	A	14/30	NA	
24229	PORTLAND/INT'L ARPT	OR		7	A	11/29	15/58/26	
24230	REDMOND/FAA AIRPORT	OR		NA	A	13/29	NA	4 yrs data
Texas (excluding Gulf Coast)								
03927	DALLAS/FORT WORTH/REGIONAL AR	TX	new	11	C	22/43	17/53/30	
23034	SAN ANGELO/WSO AIRPORT	TX		10	C	21/42	NA	
03969	STEPHENVILLE	TX		NA	C	22/44	NA	3 yrs data
13959	WACO/MADISON-COOPER ARPT	TX		12	C	22/43	NA	
12924	CORPUS CHRISTI/INT'L ARPT	TX	new	12	C	21/48	NA	
12919	BROWNSVILLE/INT'L ARPT	TX		12	C	21/48	NA	
13958	AUSTIN/MUNICIPAL ARPT	TX	new	8	B	17/40	19/48/32	
12962	HONDO/WSMO AIRPORT	TX		NA	B	15/36	NA	3 yrs data
12921	SAN ANTONIO/WSFO	TX		9	B	16/41	NA	
23023	MIDLAND/REGIONAL AIR TERMINAL	TX	new	10	B	16/37	NA	
13962	ABILENE/MUNICIPAL ARPT	TX		11	B	17/45	NA	

(continued)

Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
23047	AMARILLO/INT'L ARPT	TX	new	13	A	14/39	14/64/23	
23009	ROSWELL/INDUSTRIAL AIR PARK	NM		9	A	12/32	NA	4 yrs data
23042	LUBBOCK/REGIONAL ARPT	TX		11	A	12/31	14/60/26	
13966	WICHITA FALLS/MUNICIPAL ARPT	TX		12	A	14/39	NA	
Gulf Coast								
03937	LAKE CHARLES/MUNICIPAL ARPT	LA	new	9	A	10/25	19/46/36	
12917	PORT ARTHUR/JEFFERSON COUNTY	TX		9	A	12/29	18/48/34	
12842	TAMPA/INT'L ARPT	FL	SIS	7	A	10/28	23/36/41	
12835	FORT MYERS/PAGE FIELD	FL		7	A	10/29	NA	
93805	TALLAHASSEE/MUNICIPAL ARPT	FL		7	A	13/29	24/32/44	
12916	NEW ORLEANS/INT'L ARPT	LA	SIS	8	W	8/22	22/41/38	
13894	MOBILE/WSO AIRPORT	AL		9	W	9/26	NA	
12832	APALACHICOLA/MUNICIPAL ARPT	FL		NA	W	9/21	NA	3 yrs data
13899	PENSACOLA/REGIONAL ARPT	FL		9	A	11/26	NA	
13970	BATON ROUGE/Ryan ARPT	LA		8	W	8/21	21/40/38	
12960	HOUSTON/INTERCONTINENTAL ARPT	TX	original	8	A	12/29	18/46/36	
12912	VICTORIA/WSO AIRPORT	TX		10	A	13/37	NA	
Southeast								
03813	MACON/LEWIS B WILSON ARPT	GA	new	8	W	9/26	22/39/40	
03820	AUGUSTA/BUSH FIELD	GA		7	W	6/17	NA	3 yrs data
93842	COLUMBUS/METROPOLITAN ARPT	GA		8	A	11/25	NA	
13883	COLUMBIA/METRO ARPT	SC		6 ^a	A	11/27	21/40/39	
12839	MIAMI/INT'L ARPT	FL	original	9	A	13/34	18/43/39	
12836	KEY WEST/INT'L ARPT	FL		11	B	16/39	NA	not representative of rest of region
12843	VERO BEACH/MUNICIPAL AIRPORT	FL		NA	A	10/27	NA	3 yrs data
12844	WEST PALM BEACH/INT'L ARPT	FL		10	A	12/34	NA	

(continued)

Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
13865	MERIDIAN/KEY FIELD	MS	SIS	7	A	12/28	22/38/40	
03881	CENTREVILLE/WSMO	AL		NA	W	9/24	NA	
13895	MONTGOMERY/WSO ARPT	AL		7	W	7/19	NA	
13876	BIRMINGHAM/MUNICIPAL ARPT	AL		7	A	11/24	NA	
03856	HUNTSVILLE/MADISON COUNTY JET	AL		8	A	11/27	20/45/36	4 yrs data
03940	JACKSON/THOMPSON FIELD	MS		8	A	10/30	21/41/38	
93862	TUPELO	MS		NA	A	12/28	NA	
13893	MEMPHIS/INT'L ARPT	TN		7	A	11/27	20/44/36	
13874	ATLANTA/ATLNC-HARTSFIELD INT'	GA	original	9	A	14/32	20/46/34	
13873	ATHENS/MUNICIPAL ARPT	GA		8	A	11/25	22/41/37	
03870	GREER/GREENV'L-SPARTANBRG AP	SC		8 ^a	A	13/32	21/43/36	
13880	CHARLESTON/INT'L ARPT	SC	original	8	W	9/24	18/43/38	
12834	DAYTONA BEACH/REGIONAL ARPT	FL		9	W	8/19	NA	4 yrs data
12816	GAINESVILLE/MUNICIPAL AIRPORT	FL		NA	W	7/18	NA	
13889	JACKSONVILLE/INT'L ARPT	FL		8	W	6/16	NA	
12815	ORLANDO/INT'L ARPT	FL		7	W	9/25	NA	
03822	SAVANNAH/MUNICIPAL ARPT	GA		8	W	7/19	20/40/40	4 yrs data
13861	WAYCROSS/WSMO	GA		NA	W	8/21	NA	4 yrs data
13957	SHREVEPORT/REGIONAL ARPT	LA	SIS	9	A	12/29	20/43/37	
Middle Atlantic								
03812	ASHEVILLE/REGIONAL ARPT	NC	SIS	10	B	19/41	18/49/32	4 yrs data
13741	ROANOKE/WOODRUM ARPT	VA		10	A	11/28	18/48/34	
03860	HUNTINGTON/TRI-STATE ARPT	WV	original	7	A	13/31	20/47/34	
93814	COVINGTON/GREATER CINCINNATI	KY		9	A	13/31	NA	
03889	JACKSON/JULIAN CARROLL ARPT	KY		NA	A	13/35	NA	
93820	LEXINGTON/BLEUGRASS FIELD	KY		9	A	13/32	18/51/32	
03872	BECKLEY/RALEIGH CO MEMORIAL A	WV		10	A	11/25	NA	
13866	CHARLESTON/KANAWHA ARPT	WV		8	A	10/26	NA	
13722	RALEIGH/RALEIGH-DURHAM ARPT	NC	original	8	W	9/26	20/44/37	
13881	CHARLOTTE/DOUGLAS INT'L ARPT	NC		8	W	9/25	21/42/37	
13723	GREENSBORO,HIGH POINT / WINSTO	NC		7	A	13/31	20/43/37	

(continued)

Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
13737	NORFOLK/INT'L ARPT	VA	SIS	10	A	11/28	14/60/26	
93729	CAPE HATTERAS/WSO	NC		11 ^a	A	12/31	NA	
13748	WILMINGTON/NEW HANOVER COUNTY	NC		9 ^a	A	11/26	NA	
13740	RICHMOND/R E BYRD INT'L ARPT	VA		7	A	11/28	NA	
13739	PHILADELPHIA/INT'L ARPT	PA	original	9	A	11/31	16/54/30	
13781	WILMINGTON/GREATER WILMINGTON	DE		9	A	12/29	15/53/31	
93721	BALTIMORE/BLT-WASHNGTN INT'L	MD		9	A	13/33	16/51/33	4 yrs data
93730	ATLANTIC CITY/AIRPORT NAFEC	NJ		10	A	10/25	14/53/32	
14734	NEWARK/INT'L ARPT	NJ		NA	A	11/26	13/61/26	
04781	ISLIP	NY		NA	A	10/25	NA	
94789	NEW YORK/J F KENNEDY INT'L AR	NY		12	A	10/25	NA	
14732	NEW YORK/LAGUARDIA ARPT	NY		12	A	11/27	NA	
13743	WASHINGTON DC/NATIONAL ARPT	VA		9	B	17/33	NA	
13877	BRISTOL/TRI CITY AIRPORT	TN	new	8	W	9/21	22/40/38	
13882	CHATTANOOGA/LOVELL FIELD	TN		7	W	9/23	NA	
13891	KNOXVILLE/MC GHEE TYSON ARPT	TN		7	A	12/27	21/44/35	4 yrs data
14751	HARRISBURG/CAPITAL CITY ARPT	PA	original	9	A	11/29	17/51/33	
14737	ALLENTOWN/BETLEHEM-EASTON ARP	PA		10	A	10/27	14/57/29	
93738	WASHINGTON DC/DULLES INT'L AR	VA		9	A	11/27	NA	4 yrs data
Northeast								
14740	HARTFORD/BRADLEY INT'L ARPT	CT	original	8	A	14/27	15/54/31	
14739	BOSTON/LOGAN INT'L ARPT	MA		NA	A	12/29	10/72/17	
14765	PROVIDENCE/T F GREEN STATE AR	RI		10	A	10/26	NA	
14742	BURLINGTON/INT'L ARPT	VT	SIS	10	B	20/37	13/61/26	position in valley funnels winds
14764	PORTLAND/INT'L JETPORT	ME	original	9	A	11/25	14/55/31	
14606	BANGOR/FAA AIRPORT	ME		NA	A	11/24	NA	
14745	CONCORD/MUNICIPAL ARPT	NH		9	A	13/28	NA	

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Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
14778	WILLIAMSPORT-LYCOMING /COUNTY	PA	SIS	9	A	12/32	16/56/28	
14735	ALBANY/COUNTY ARPT	NY		10	A	13/30	14/60/27	
04725	BINGHAMTON/EDWIN A LINK FIELD	NY		10	A	10/28	12/64/23	
94725	MASSENA/FAA AIRPORT	NY		NA	A	11/28	NA	
14771	SYRACUSE/HANCOCK INT'L ARPT	NY		10	A	11/31	NA	
04751	BRADFORD/FAA AIRPORT	PA		NA	A	11/31	NA	
14777	WILKES-BARRE/WB-SCRANTON WSO	PA		8	A	12/29	15/56/29	3 yrs only
Great Lakes								
14820	CLEVELAND/HOPKINS INT'L ARPT	OH	original	10	B	19/42	13/63/24	
14733	BUFFALO/GREATER BUFFALO INT'L	NY		12	A	14/37	11/67/21	
14768	ROCHESTER/ROCHESTER-MONROE CO	NY		11	B	15/37	13/64/24	
14860	ERIE/INT'L ARPT	PA		10	B	17/38	NA	
14840	MUSKEGON/COUNTY ARPT	MI	SIS	11	W	9/23	12/66/22	2 yrs data
14848	SOUTH BEND/MICHIANA REGIONAL	IN		10	A	12/31	13/62/25	
94860	GRAND RAPIDS/KENT CO INT'L AR	MI		10	A	11/27	13/61/26	
14847	SAULT STE MARIE/NWSO	MI		9	A	13/28	NA	4 yrs data
14850	TRAVERSE CITY/FAA AIRPORT	MI		NA	A	11/31	NA	
94846	CHICAGO/O'HARE INT'L ARPT	IL	original	9	A	11/29	14/59/27	
14898	GREEN BAY/AUSTIN STRAUBEL FIE	WI		10	A	10/27	14/57/29	
14839	MILWAUKEE/GENERAL MITCHELL FI	WI		11	A	11/29	NA	
94847	DETROIT/METROPOLITAN ARPT	MI	new	10	A	11/27	12/62/26	
94849	ALPENA/PHELPS COLLINS AP	MI		8	W	9/25	NA	4 yrs data
14822	DETROIT/CITY AIRPORT	MI		NA	W	9/25	NA	3 yrs data
14826	FLINT/BISHOP ARPT	MI		10	A	10/30	13/61/26	
14836	LANSING/CAPITAL CITY ARPT	MI		11	A	10/28	NA	
94830	TOLEDO/EXPRESS ARPT	OH		10	A	14/33	NA	3 yrs data
Central States								
13897	NASHVILLE/METRO ARPT	TN	SIS	8	B	16/32	20/44/36	
03816	PADUCAH/WSO AIRPORT	KY		NA	B	18/33	NA	

(continued)

Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
13963	LITTLE ROCK/ADAMS FIELD	AR	original	7	W	8/23	NA	in valley between mountain groups
13968	TULSA/INT'L ARPT	OK	SIS	11	B	19/42	15/53/31	
13964	FORT SMITH/MUNICIPAL ARPT	AR		6	B	16/38	NA	
13985	DODGE CITY/MUNICIPAL ARPT	KS		14	B	18/37	13/65/22	
93997	RUSSELL/FAA AIRPORT	KS		NA	B	15/35	NA	
03928	WICHITA/MID-CONTINENT ARPT	KS		12	C	21/39	13/59/27	
13995	SPRINGFIELD/REGIONAL ARPT	MO		10	B	19/42	17/51/31	
13967	OKLAHOMA CITY/WILL ROGERS WOR	OK		12	C	21/45	14/59/27	
13994	ST LOUIS/LAMBERT INT'L ARPT	MO	new	10	A	10/25	16/54/29	
93817	EVANSVILLE/DRESS REGIONAL ARP	IN		9	W	8/22	18/48/34	
93821	LOUISVILLE/STANDIFORD FIELD	KY		8	A	11/28	NA	
03945	COLUMBIA/REGIONAL ARPT	MO		9	B	16/34	17/52/31	4 yrs data
03966	ST LOUIS/SPIRIT OF ST LOUIS	MO		NA	A	10/23	NA	3 yrs data
14922	MINNEAPOLIS-ST PAUL/INT'L ARP	MN	original	11	A	10/23	14/59/28	
94822	ROCKFORD/GREATER ROCKFORD ARP	IL		9	B	17/29	13/60/28	
14913	DULUTH/INT'L ARPT	MN		11	A	11/27	12/64/25	
14918	INTERNATIONAL FALLS/INT'L ARP	MN		9	W	9/25	NA	
14925	ROCHESTER/MUNICIPAL ARPT	MN		12	A	12/28	NA	4 yrs data
14914	FARGO/HECTOR FIELD	ND		13	A	14/32	NA	
14936	HURON/REGIONAL ARPT	SD		12	A	13/31	NA	
14991	EAU CLAIRE/FAA AIRPORT	WI		NA	W	7/20	NA	
14920	LA CROSSE/MUNICIPAL ARPT	WI		NA	A	14/31	NA	4 yrs data
14837	MADISON/DANE CO REGIONAL ARPT	WI		9	B	15/28	NA	
14935	GRAND ISLAND/ARPT	NE	original	12	B	15/31	14/57/29	a.k.a. Lincoln
14943	SIOUX CITY/MUNICIPAL ARPT	IA		11	A	14/27	NA	
13984	CONCORDIA/BLOSSER MUNICIPAL A	KS		13	A	12/29	NA	
13996	TOPEKA/MUNICIPAL ARPT	KS		11	A	10/28	NA	

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Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
03947	KANSAS CITY/INT'L ARPT	MO		11	B	15/34	15/56/29	
14939	LINCOLN/MUNICIPAL ARPT	NE		10	A	13/30	NA	
14941	NORFOLK/KARL STEFAN MEM ARPT	NE		NA	A	11/27	NA	
94918	NORTH OMAHA/NWSFO ARPT	NE		NA	A	11/31	NA	
24023	NORTH PLATTE/LEE BIRD FLD	NE		11	A	11/26	NA	
14942	OMAHA/EPPLEY AIRFIELD	NE		10	B	18/38	NA	
14944	SIOUX FALLS/FOSS FIELD	SD		NA	W	9/24	NA	
23062	DENVER/STAPLETON INT'L ARPT	CO	original	8	A	14/34	25/38/37	a.k.a. Boulder 94018
93037	COLORADO SPRINGS/MUNICIPAL AR	CO		10	A	12/33	NA	
23066	GRAND JUNCTION/WALKER FIELD	CO		8	B	16/38	NA	
23065	GOODLAND/RENNER FIELD	KS		12	A	13/30	NA	
24018	CHEYENNE/MUNICIPAL ARPT	WY		13	B	16/40	13/63/24	
24011	BISMARCK/MUNICIPAL ARPT	ND	original	12	W	9/24	14/53/33	
24037	MILES CITY/MUNICIPAL ARPT	MT		9	A	12/27	18/50/32	3 yrs data
24013	MINOT/FAA AIRPORT	ND		NA	A	13/31	NA	3 yrs data
94014	WILLISTON/SLOULIN INT'L ARPT	ND		9	W	8/22	NA	
24025	PIERRE/FAA AIRPORT	SD		NA	A	11/27	NA	
24033	BILLINGS/LOGAN INT'L ARPT	MT	SIS	10	C	24/41	17/60/23	
94008	GLASGOW/INT'L ARPT	MT		11	B	16/32	NA	
24143	GREAT FALLS/INT'L ARPT	MT		13	C	26/52	NA	
24089	CASPER/NATRONA CO INT'L ARPT	WY	original	14	C	26/49	13/61/26	
24028	SCOTTSBLUFF/COUNTY AIRPORT	NE		11	C	22/40	NA	
24090	RAPID CITY/REGIONAL ARPT	SD		15	B	16/40	NA	
24021	LANDER/HUNT FIELD	WY		8	A	11/27	NA	4 yrs only
24029	SHERIDAN/COUNTY ARPT	WY		11	A	13/32	NA	
93815	DAYTON/INT'L ARPT	OH	new	10	A	11/28	15/57/28	
14827	FORT WAYNE/BAER FIELD	IN		11	A	13/27	NA	
93819	INDIANAPOLIS/INT'L ARPT	IN		9	A	11/28	16/54/30	
14895	AKRON/AKRON-CANTON REGIONAL	OH		9	A	12/31	13/60/26	
14821	COLUMBUS/PORT COLUMBUS INT'L	OH		8	W	7/21	15/53/31	

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Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
14852	YOUNGSTOWN/MUNICIPAL ARPT	OH		10	A	11/28	13/62/25	
94823	PITTSBURGH/WSCOM 2 AIRPORT	PA		10	A	10/29	13/57/29	
94910	WATERLOO/MUNICIPAL ARPT	IA	new	11	A	12/27	NA	
14933	DES MOINES/INT'L ARPT	IA		11	A	12/28	NA	
14940	MASON CITY/FAA AIRPORT	IA		NA	A	11/26	NA	4 yrs data
14923	MOLINE/QUAD-CITY ARPT	IL		11	A	10/25	13/58/29	
14842	PEORIA/GREATER PEORIA ARPT	IL		9	A	14/29	15/56/29	
93822	SPRINGFIELD/CAPITAL ARPT	IL		11	A	13/30	14/59/27	
Alaska								
25309	JUNEAU/INT'L ARPT	AK	new	NA	C	21/43	NA	3 yrs data, large facility in the Toxics Release Inventory (TRI), unique location due to coastal mountains
26451	ANCHORAGE/WSMO AIRPORT	AK	new	8	A	12/29	NA	multiple facilities in TRI, unique wind regime due to location surrounded by mountains and water
26409	ANCHORAGE	AK						
27502	BARROW/W POST-W ROGERS ARPT	AK						
27401	BARTER ISLAND/WSO AIRPORT	AK						
26615	BETHEL/WSO AIRPORT	AK						
26533	BETTLES/BETTLES FIELD	AK						
25624	COLD BAY/ARPT	AK						
26411	FAIRBANKS/INT'L ARPT	AK		6				
25507	HOMER/ARPT	AK						
25503	KING SALMON/ARPT	AK						
25501	KODIAK/U S C G BASE	AK		11				

(continued)

Table D1-1. (continued)

Station No.	Station Name	State	Status	Wind Speed (knots)	Wind-Rose Bin ^b	Wind Directionality ^c	Stability Class ^d	Notes
26616	KOTZEBUE/RALPH WEIN MEMORIAL	AK						
26510	MC GRATH/ARPT	AK		6				
26617	NOME/MUNICIPAL ARPT	AK						
26442	VALDEZ/WSO	AK		8				
25339	YAKUTAT/STATE ARPT	AK		8				
Hawaii								
22521	HONOLULU/INT'L ARPT	HI	new	NA	C	39/66	NA	
21504	HILO/GENERAL LYMAN FIELD	HI		NA	B	16/37	NA	winds affected by mountains, so not representative of entire island
22536	LIHUE/ARPT	HI		NA	C	34/69	NA	3 yrs data, adequately represented by Honolulu
Puerto Rico								
11641	SAN JUAN/ISLA VERDE INT'L ARP	PR	new	11	C	22/56	NA	

^a International Station Meteorological Climate Summary (ISMCS) value unrealistically low; estimated from wind-rose data.

^b Key to wind-rose bins:

W: Weakly directional, one-directional wind < 10%

A: Mildly directional, one-directional wind 10–14%

B: Moderately directional, one-directional wind 15–20%

C: Strongly directional, one-directional wind > 20%

^c % in 1 direction/% in 3 directions

^d % Unstable/% Neutral/% Stable